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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 264

Contribution from the Bureau of Entomology
L. O. HOWARD, Chief

Washington, D. C. ▼ June 15, 1915.

THE VIOLET ROVE-BEETLE.

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INTRODUCTION.

Beginning with the year 1901 a small dark-colored rove beetle, known to science as *Apocellus sphaericollis* Say, has been reported as an enemy to violets and other succulent ornamental plants in the District of Columbia and from St. Louis, Mo. This insect is a very common one in the United States and is quite generally known as a scavenger, feeding on humus and decaying vegetation and similar matter. That it feeds on violets as well as on a variety of other vegetation is now undoubted. Informants have furnished abundant proof of this in the eaten flowers and leaves, while beetles in confinement in the writer's laboratory were observed by him to attack violets and other plants. Nor does the insect confine itself to plants grown indoors or in gardens, since in its Washington occurrence the violets were grown in hothouses and at St. Louis the various plants affected were growing in the open. There is no doubt, however, that although the habit of the insect of feeding on delicate flowers and leaves is well established it is nevertheless an acquired taste, the insect living normally like others of its kind on old, dead leaves or in soil which has been covered by leaves over winter.

Undoubtedly injury by this species is more extensive than our notes show. This may be ascribed mainly to the resemblance of this insect, to the casual observer at least, to an ant, and to the fact that the beetles swarm in numbers on plants in the manner of ants. The year after the first report of injury by this species so many complaints of injuries by ants in greenhouses were made that the Florists' Exchange[2] asked the writer for an article bearing upon this subject.

[1] A large proportion of the insects which infest the garden also infest greenhouses, as in the present instance. Next to roses, violets are favorite flowers grown in this and some other countries. In Bulletin No. 27, new series, Bureau of Entomology (out of print, but available in libraries), a somewhat comprehensive publication on violet insects was furnished.

[2] F. H. C. A violet pest. *In* The Florists' Exchange, v. 36, No. 23, p. 1216, Dec. 6, 1913.

It now seems probable that in some of these cases the rove-beetle might have been the culprit. The complaints cover scatteringly a span of 12 years.

It has been hoped that something more definite than is recorded concerning the life history of the insect could be learned before publication. The notes now presented, however, show conclusively the injurious character of the insect, and the remedies advised and used have proved perfectly successful, showing that it is not by any means a difficult insect with which the gardener or florist has to cope.

DESCRIPTIVE.

The ant which this beetle especially resembles is known as the pavement ant (*Tetramorium caespitum* L.). This ant often occurs in greenhouses, but when the two insects are carefully compared the much larger antennæ, or "feelers," of the beetle will readily be noticed.

FIG. 1.—The violet rove-beetle (*Apocellus sphaericollis*): Adult. Greatly enlarged. (Original.)

Apocellus sphaericollis belongs to the group Oxytelini of the family Staphylinidæ, and is the sole representative of its genus occurring in the United States. It was originally described by Say in 1834, under the name of *Lathrobium sphaericolle*. The general appearance of the insect is shown in the accompanying illustration (fig. 1). The head is only slightly larger than the thorax, which is somewhat rounded. The elytra or wing covers are very short, as is usual in typical Staphylinidæ. The femora or thighs are larger than those of ants, but this is not noticeable at a distance when the insects are at work. The total length of the insect is about 2.5 millimeters.

October 14, 1901, Mr. L. J. Barber, Wheeler Road, near Congress Heights, Washington, D. C., brought living specimens of this rove-beetle, with report that it was injuring violets grown in hothouses, particularly low-growing forms, but did not attack the high-growing plants. He was positive that the beetles destroyed the flowers by riddling them with holes, and in response to inquiry thought it quite probable that they were introduced in manure that he was using.

Injury was thought, both by Mr. E. A. Schwarz, of the Bureau of Entomology, who furnished the identification of the species, and by the writer, to be due to some other insect, but Mr. Barber stated otherwise.

Two days later he brought specimens of the beetles with single-flowered violets which had not previously been attacked. Some of these already showed injury by the beetles. The chief injury was to the Marie Louise double violets, which grow with the flowers resting on the ground, and to Campbell double flowers, which are on the ground in their early stage but afterwards become erect. It seems that the beetles crawl directly from the ground to the flowers, and this accounts for the single-flowered varieties being free from infestation. No part of the plant other than the flowers was injured or attacked, so far as could be ascertained.

August 14, 1905, Mr. G. Pauls, St. Louis Altenheim, St. Louis, Mo., sent a specimen of this rove-beetle, which he stated was the greatest plant destroyer of the year at the Altenheim. The plants affected included lilies, dahlia, pansy, forget-me-not, and other soft plants, which were destroyed. The beetles were described as occurring everywhere, but preferring a low or mulch soil, especially under fallen leaves. September 9, 1905, he sent additional specimens with a plant of portulaca, which they were attacking. In his pansy beds, which they had completely ruined, the chickweed and yellow wood sorrel were not troubled. Portulaca seemed to be a favorite food.

November 21, 1913, the Florists' Exchange of New York furnished specimens of this insect on violets, requesting the name of the insect and asking what could be done to remedy the evil. Exact locality was not furnished.

REMEDIES.

Acting by the writer's advice, Mr. Barber used decaying leaves, deposited in piles at regular intervals about infested violet plants. This attracted the rove-beetles, after which the leaves were quickly dipped into hot water, which killed the insects, the leaves afterwards being restored as traps.

Four years after the first occurrence of this insect on hothouse violets it had disappeared as a pest, Mr. Barber reporting that he had used spinach, kale, and chickweed as traps, as advised. The same year Mr. Pauls reported that he had been successful in ridding his garden of this pest, at least on three of his pansy beds, by dusting them with tobacco. As a rule he could find no more rove-beetles, although in adjoining beds they were nearly as plentiful as before treatment. This report was received September 20, 1905.

There can be little doubt that injury by this species might be prevented by care in looking over the soil, or the dead leaves used as a mulch in violet or pansy beds, for the presence of the insect. Sterilization of this material before using would result in the destruction of the insect and prevent its introduction into the greenhouse or flower beds.

It might be added that it is fortunate that we can control this insect by comparatively simple means, since it is not desirable to fumigate violets when they are in bloom. Nicotine extracts are practically impossible, because of the more or less permanent odor which would obliterate that of the violets, and it is equally obvious that the use of arsenical sprays would be inadvisable.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1915